

WHAT IS CLAIMED IS:

1. A method for treating a biological sample with reagents, said method comprising the steps of:
 - (a) mounting said biological sample onto a microscope slide,
 - (b) inserting said microscope slide into a slideholder, said slideholder being capable of holding a plurality of slides,
 - (c) predrying at least one reagent in a well on a tray,
 - (d) placing said microscope slide in said slideholder on top of said well to allow said biological sample to contact said reagents in said well, and
 - (e) adding water or buffer to said well to dissolve said reagent.
2. The method of claim 1 wherein more than one reagent is predried in said well and wherein said more than one reagent is dissolved upon addition of water or buffer.
3. The method of claim 2 wherein reagents are dried sequentially in reverse order of action.
4. The method of claim 3 wherein said reagents are separated from each other by an inert material.
5. A method of assaying a biological sample on a slide wherein one or more external controls are placed on said slide and processed simultaneously with said biological sample for one or more steps of said method.
6. The method of claim 5 wherein said external controls are on a membrane which is placed on said slide.
7. The method of claim 5 wherein said slide is placed on a well containing one or more reagents which react with said biological sample.
8. A slide comprising a biological sample and an external control.

9. A membrane comprising a plurality of control materials.
10. The membrane of claim 9 wherein said control materials are selected from the group consisting of antigens, peptides, proteins, nucleic acids and cells.
11. The membrane of claim 9 wherein said membrane comprises said control materials on a first face of said membrane and a substance on a second face of said membrane wherein said substance causes said membrane to adhere to a slide when contacted with said slide.
12. The membrane of claim 9 wherein said membrane is adhered to a slide.
13. A kit comprising a membrane of claim 9 in combination with a multiwell tray.
14. The kit of claim 13 wherein said multiwell tray comprises predried reagents.
15. The kit of claim 13 wherein a reagent added to a well of said multiwell tray reacts with a control material on said membrane.
16. A tray comprising a well wherein said well comprises a reagent to be used for an assay of a biological sample and wherein said reagent is dried in said well prior to performing said assay.
17. The tray of claim 16 wherein more than one reagent is dried in said well.
18. The tray of claim 17 wherein different reagents are dried in said well in a manner in which they dissolve sequentially after addition of water or buffer to said well wherein a first acting reagent dissolves prior to a second acting reagent dissolving.
19. The tray of claim 18 wherein said reagents are separated from each other by an inert layer.

20. A coverslip for a microscope slide wherein a portion of said coverslip is concave thereby enclosing a known volume when placed onto a microscope slide.
21. The coverslip of claim 20 further comprising reagents dried thereon.
22. A combination of the coverslip of claim 20, a microscope slide and an insert sandwiched between a portion of said coverslip and said microscope slide.
23. The combination of claim 22 wherein said insert comprises a control sample.
24. The coverslip of claim 20 wherein said coverslip is labeled with a barcode or text.
25. A method of performing an assay on a biological sample on a microscope slide, comprising:
a) placing a biological sample on a microscope slide;
b) placing the coverslip of claim 20 on said microscope slide;
c) allowing water, buffer or reagent to flow into the known volume between said microscope slide and said coverslip; and
d) allowing a reaction to occur.
26. The method of claim 25 wherein said coverslip comprises a reagent predried onto it.
27. A method of performing an assay on a biological sample on a microscope slide, comprising:
a) placing a biological sample on a microscope slide;
b) placing said microscope slide of step (a) into a reaction chamber for processing;
c) placing a coverslip into said reaction chamber; and
d) allowing a reaction to occur.
28. The method of claim 27 wherein said coverslip comprises a reagent dried on it prior to placing said coverslip into said reaction chamber.

29. The method of claim 27 wherein said coverslip comprises a control sample placed onto it prior to allowing said reaction to occur.
30. The method of claim 27 wherein said coverslip comprises a barcode or text.
31. A multireaction chamber machine comprising one or more inlets and one or more outlets into each reaction chamber of said machine.
32. The multireaction chamber machine of claim 31 in combination with a heating block.
33. The multireaction chamber machine of claim 31 in combination with a pump wherein tubing connects said pump to said inlet.
34. The multireaction chamber machine of claim 33 in combination with a central processing unit which controls said pump.
35. The multireaction chamber machine of claim 31 in combination with means to vary volume of space in one or more reaction chambers of said machine.
36. The multireaction chamber machine of claim 35 wherein said means comprises a central processing unit.
37. A method of performing *in situ* hybridization on a biological sample in combination with *in situ* nucleic acid amplification wherein said biological sample is contacted with a solution comprising reagents for performing nucleic acid amplification, if necessary said solution is cycled through temperatures sufficient to allow nucleic acid amplification to occur, and then said biological sample is analyzed for *in situ* hybridization and a sample of said solution is analyzed for amplified nucleic acid.

CONFIDENTIAL

38. A method of treating a biological sample on a slide with a reagent wherein
- i) said reagent is coated on a piece of filter paper; and
 - ii) said biological sample on said slide is placed in contact with said filter paper.
39. A tray to be contacted to a slide wherein said tray comprises multiple wells wherein each well contacts only a portion of said slide and wherein each well is separated from neighboring wells by a gap or trough.
40. A method of performing in situ hybridization using said tray of claim 39.
41. The method of claim 40 wherein nucleic acid probes are predried in wells of said tray.
42. The method of claim 40 wherein said slide comprises control nucleic acids prearranged on said slide.

TOKUYAMA SEIKO LTD.